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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/519,955

Filing Date: December 30, 2004

Appellant(s): KOKKONEN ET AL.

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Brandon T. Schurter  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10/19/2009 appealing from the Office action  
mailed 4/8/2009.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The following are the related appeals, interferences, and judicial proceedings known to the examiner which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

5,685,892	Ikoma et al	11-1997
4,578,977	Murakami et al	4-1986

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 103***

Claims 1-6, 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al (US 5,685,892, thereafter US'892) in view of in view of Murakami et al (US, 4,578,977, thereafter US'977).

Regarding claims 1 and 9, US'892 teaches an improved arrangements for charging anode scraps into a copper-smelting furnace such as a converting furnace (Col.1, line 8-15 of US'892). US'892 teaches the charging assembly includes a chute-sloping channel (or be called funnel—Refer to Fig. 4, Col.3, line 60 to Col.4, line 4 of US'892), feeding anode scrap sheets one by one by extension and retraction of a hydraulic cylinder (Col.4, line 15-20 of US'892), and bending a bending member for pressing the leading end of the anode scrap with the bending angle of 10° to 45° (claim 8 and Col.8, line 26-34 of US'892). US'892 further teaches when the bent leading end of the anode scrap reaches the melt in the converting furnace, the leading end tends to float in the melt due to the increase in the resistance exerted thereon and changes its posture gradually from a vertical one to a horizontal one. Thus, the anode scrap

sheet is prevented from impinging against the furnace bottom (Col.8, line 6-25 of US'892). US'892 does not explicitly teach the radius of curvature of about 1,000 to 3,000 millimeters as recited in the instant claims. However, the bending position and bending degrees are recognized as result-effective variables in term of the feeding result, which is evidenced by US'892 (Col.8, lines 26-33 of US'892). US'892 teaches: "The bending angle and length of the bent portion 1b of the anode scrap sheet (1) may change depending upon the construction of the chute or the like, but according to the inventors' experimentation, the bending angle should be preferably from 10 degree to 45 degree, and more preferably from 20 degree to 45 degree, whereas the bending length should be preferably from 50 mm to 200 mm, and more preferably from 100 mm to 200 mm." US'892 further teaches when the bent leading end of the anode scrap reaches the melt in the converting furnace, the leading end tends to float in the melt due to the increase in the resistance exerted thereon and changes its posture gradually from vertical one to a horizontal one. Thus, the anode scrap sheet is prevented from impinging against the furnace bottom (Col.8, lines 6-25 of US'892). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the bending angle and the bending position as demonstrated in US'892

in order to avoid anode impinging against the furnace bottom (Col.7, lines 48-59 of US'892). See MPEP 2144.05 II.

Furthermore, the limitations in the instant claim 1: "essentially completely bending the anode on both sides with respect to the center of the anode"; and "altering the falling trajectory of the anode" are considered as process limitations in an apparatus application. US'892 teaches a similar smelting apparatus feeding with the similar bending anode in order to solve the same problem for avoiding the anodes impinging against the furnace bottom as recited in the instant invention (Abstract, Page 1, line 28 to page 2, line 4 of the instant specification). It is well settled that the manner in which an apparatus operates is not germane to the issue of patentability of the apparatus it self. *Ex parte Wikdahl* 10 USPQ 2d 1546, 1546 (BPAI 1989); *Ex parte McCullough* 7 USPQ 2d 1889, 1891 (BPAI 1988); *In re Finsterwalder* 168 USP 530 (CCPA 1971); *In re Casey* 152 USPQ 235, 238 (CCPA 1967). In the instant case, the prior art apparatus of US'892 would be capable of being operated in the manner as claimed. Therefore, the claimed features of "essentially completely bending the anode on both sides with respect to the center of the anode" and "alter[ing] the falling

trajectory of the anode" do not add patentability weight to the instant apparatus claims for the feeding anode. MPEP 2114 [R-1].

US'892 does not explicitly teach bending the anode by a four rolling rollers that are located above the feeding funnel and the diameter of rolling roller is 100 to 500 millimeters as recited in the instant claim 1. However, US'892 teaches the similar bending technique to change the anode sheet shape with different bending angles for same purpose-feeding anode sheet in an essentially horizontal position as recited in the instant claim. Applying four rolling rollers to perform bending on a shaped metal is a well-known technique as evidenced by US'977. US'977 teaches two to four rolls selected from the group, the four rolling rolls are used for performing roll bending on shape metal (Abstract of US'977) and the rolling rollers are adjustable (Col.6, lines 21-32 and claim 1 of US'977). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize the bending technique, for example, using four rolling rollers with diameters 100 to 500 millimeters and arrange the above the feeding funnel as demonstrated in US'892 (Col. 8, Line 6-64 of US'892) in view of US'977 to avoid anodes impinging against the

furnace bottom (Col.7, line 48-59 of US'892). See MPEP 2144.05

II.

Regarding claim 2, US'892 teaches the chute secured onto the inner surface of the through -opening of the converting furnace. The chute is immediate vicinity of the reaction shaft of smelting reactor (Fig. 4,5 and 9; Col.3, line 60-63; Col.1, line 58-65 of US'892).

Regarding claims 3, 4, 5, and 13, US'892 teaches inclination angle of chute (with respect to horizontal line) may range from  $30^{\circ}$  to  $89^{\circ}$ , but preferably from  $38^{\circ}$  to  $60^{\circ}$  (Col.5, line 57-59 of US'892). US'892 further teaches jump rail is included in the charging assembly (Col.7, line 48-59 of US'892). The jump rail arrangement is shown in figure 4 (90). From above arrangement and discuss, the angle of the inclination of the top part with respect to the horizontal level is large than that of the bottom part.

But US'892 does not explicitly teach an angle between the top part and the bottom part of the feeding funnel is about 10 to 30 degree as recited in the instant claim 4. However, this angle is recognized as a result-effective variable in terms of feeding anode a generally horizontal position. This is evidenced by US'892. US'892 teaches jump rails may raise the anode scrap

sheets from the inclined surface of the chute while the leading ends thereof continue to slide on the inclined inner surface of chute. In this manner, the anodes reach the melt in the converting furnace with a generally horizontal position (Col.7, line 48-59 of US'892). It would have been obvious to one skill in the art to optimize the angle between the top part and the bottom part of the feeding funnel, for example, 10 to 30 degree to avoid anodes impinging against the furnace bottom (Col.7, line 48-59 of US'892). See MPEP 2144.05 II.

According to the definition for the term of "trajectory-shifting element", it can be a jump rail or a corresponding bracket provided on the surface of the feeding funnel. US'892 teaches jump rail in anode charging system for alter the trajectory of the anode as discussed above. A jump rail is a kind of guiding elements for adjusting the sliding direction of the anode.

Regarding claim 6, US'892 teaches distance between lower end of chute and the melt may be designed from 500 to 2500 mm. This distance range overlaps the distance range recited in the instant claim.

Regarding claim 10, US'892 teaches more than one of scrap sheets could be charged into chute at the same time (Col. line 15-47 of US'892).

Regarding claim 11, US'892 teaches an anode grip portions are pointed upwards as anodes dropping into the reactor (Fig.5 and 6 of US'892). US'892 further teaches bend portion is directed upwards with respect to a direction of introduction of the anode scrap (Col.2, line 50-63 of US'892).

Regarding claim 12, US'892 teaches an outer shutter and an inner shutter are adapted to open and close independently of each other (Col.3, line 60 to 66).

#### **(10) Response to Argument**

The Appellant's arguments with respect to claims 1-6 and 9-13 have been fully considered but they are not persuasive.

Appellants' arguments are summarized as follows:

1), Neither US'892 nor US'977 alone or in combination teach or suggest all of the elements required by the instant claims: i) US'892 does not teach rolling rollers or completely bending an anode as required by the instant claims; ii) the rolling rollers of the instant claims are functionally and structurally different than the rolling rollers of US'977; iii) Modifying the configuration of the rolling rollers of US'977 would destroy the

intended function of the invention disclosed in US'977; iv) the diameter of the rolling rollers is not taught or suggested in US'892 or US'977.

2), the Examiner incorrectly stated that "the applicant's [sic] arguments [sic] against the references individually, one cannot show nonobviousness by attacking references individually". Appellants have properly presented arguments showing that the cited references either alone or in combination do not teach or suggest the instant claims.

3) thereis no motivation to combine US'892 and US'977 and a combination of these references does not produce the apparatus of the instant claims.

Responses are as follows:

Regarding the argument 1, as pointed out in the rejection for the instant claim 1, although US'892 does not explicitly teach bending the anode by a four rolling rollers that are located above the feeding funnel and the diameter of rolling roller is 100 to 500 millimeters as recited in the insatnt claim 1, however, US'892 teaches the similar bending technique to change the anode sheet shape with different bending angles for same purpose-feeding anode sheet in an essentially horizontal position as recited in the instant claim. Applying four rolling rollers to perform bending on metal is a well-known technique as evidenced by US'977. US'977 teaches two to four rolls selected from the group, the four rolling rolls are used for performing roll bending on shape metal (Abstract of US'977), which is the same four rolling rollers for the same bending function on the similar shape metal as recited in the instant invention. The Examiner notes that the bending position, and bending degrees are recognized as result-effective variables

in term of feeding result, which is evidenced by US'892 (Col.8, lines 26-33 of US'892). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the bending angle and the bending position as demonstrated in US'892 in order to avoid anode impinging against the furnace bottom (Col.7, lines 48-59 of US'892). See MPEP 2144.05 II. The Examiner further notes that US'977 teaches the rolling rollers are adjustable (Col.6, lines 21-32 and claim 1 of US'977). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to optimize the bending technique, for example, using four rolling rollers and adjusting the diameters and arrange of the rolling rollers as demonstrated by US'977 in the apparatus of US'892 in order to obtain the shaped anodes to avoid anodes impinging against the furnace bottom (Col.7, line 48-59 of US'892). See MPEP 2144.05 II.

Regarding the arguments 2 and 3, because the bending using the four rolling rollers technique is well known in the art as evidenced by US'977 and US'977 teaches the rolling rollers are adjustable (Col.6, lines 21-32 and claim 1 of US'977), it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply the well-known four rolling rollers technique to perform the anode bending of US'892 with expected success. US'977 teaches performing various shapes and dimensions to be bent by the four rolling rollers (Col.1, lines 6-12 of US'977), which is a good motivation to combine the teaching of the US'892 patent and the US'977 patent to obtain the desired apparatus as recited in the instant claims.

Furthermore, "essentially completely bending the anode on both sides with respect to the center of the anode and having a radius of curvature of 1,000-3,000 millimeters, wherein each rolling roller has a diameter range from 100-500 millimeters" in the instant claim 1 is considered as process imitations in an apparatus application. It is well settled that the manner in which an apparatus operates is not germane to the issue of patentability of the apparatus it self. Ex parte Wikdahl 10 USPQ 2d 1546, 1546 (BPAI 1989); Ex parte McCullough 7 USPQ 2d 1889, 1891 (BPAI 1988); In re Finsterwalder 168 USP 530 (CCPA 1971); In re Casey 152 USPQ 235, 238 (CCPA 1967). In the instant case, the prior art apparatus of US'892 would be capable of being operated in the manner as claimed. Therefore, the features of "essentially completely bending the anode on both sides with respect to the center of the anode and having a radius of curvature of 1,000-3,000 millimeters, wherein each rolling roller has a diameter range from 100-500 millimeters" do not add patentability weight to the instant apparatus claims for the feeding anode. MPEP 2114 [R-1]; Secondly, US'892 has clearly shown that the bending position and bending degrees are recognized as result-effective variables in term of feeding result, for examples, US'892 teaches: "The bending angle and length of the bent portion 1b of the anode scrap sheet (1) may change depending upon the construction of the chute or the like, but according to the inventors' experimentation..." and US'892 further teaches when the bent leading end of the anode scrap reaches the melt in the converting furnace, the leading end tends to float in the melt due to the increase in the resistance exerted thereon and changes its posture gradually from vertical one to a horizontal one. Thus, the anode scrap sheet is

prevented from impinging against the furnace bottom (Col.8, lines 6-25 of US'892); Thirdly, US'977 teaches the rolling rollers are adjustable (Col.6, lines 21-32 and claim 1 of US'977). Therefore, it is the Examiner's position that it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the bending angle and the bending position by four rolling rollers method as demonstrated in US'892 in view of US'977 in order to avoid anode impinging against the furnace bottom (Col.7, lines 48-59 of US'892). See MPEP 2144.05 II.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Jie Yang/

Jie Yang, Art Unit 1793

Conferees:

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